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Analysis of the Impact of Food Stamp Redemptions on Food Stores and Regions

Fiscal Year 1978

Paul E. Nelson

PRODUCTION
CURRENT STAMP RECORDS

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ANALYSIS OF THE IMPACT OF FOOD STAMP REDEMPTIONS ON FOOD STORES
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ABSTRACT

Among stores accepting food stamps in fiscal year 1978, large chain stores were concentrated in higher income, white collar neighborhoods and suburban areas, where most households had access to a car. Smaller stores, particularly independent grocers, predominated in lower income and especially black neighborhoods. Such socioeconomic differences explained about 27 percent of the variation among store trading areas in the proportion of food stamp redemptions to total food sales. Regional shares of all food stores accepting food stamps, their food sales, and level of food stamp redemptions differed significantly in both 1976 and 1978. Changes that occurred between the two years, however, were not significant.

Keywords: Food sales, food stamps, retail food stores, food chains, independents, bakery routes, dairy routes, mobile stores, trading areas.

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SUMMARY

Food stamp redemptions as a proportion of food sales differed significantly by kind of food store, size of store, and region in fiscal year 1978, according to an analysis of data on 211,000 stores participating in the food stamp program. The differences were similar to those found in an earlier study of fiscal year 1976 data.

Socioeconomic characteristics of the households located in the trading areas of participating stores suggest distinct differences in the location of chain stores (mostly supermarkets) and independent grocery stores, most of which have smaller sales than chains.

In areas where the median annual household income was less than \$5,000, 95.3 percent of all food stores were independents. Eighty-nine percent of the chain stores were located in areas where at least three-fourths of the households had regular access to a car; only 70 percent of the independents were so located. Chains more often were found in newer areas on the suburban fringes. Also, half the chain establishments were in trading areas where a majority of households were headed by white collar workers, versus only one-fifth of the independents. Chains were underrepresented in minority areas.

In predominantly black areas, chains accounted for 5.7 percent of all grocery establishments; independents 94.3 percent. In areas with high concentrations of Hispanic households, chains maintained 11.3 percent of the food stores; independents 88.7 percent.

The socioeconomic differences in trading-area households partly explained the differences in the proportion of food stamp redemptions to total food sales of different kinds and sizes of food stores. Of 11 socioeconomic factors tested in a regression analysis, one, the percentage of households without regular access to a car, was most strongly linked to the level of food stamp redemptions. Other significant links were shown for the percentage of households earning less than \$5,000 and the percentage of households with at least six persons. Collectively, the 11 variables explained 27 percent of the variations in food stamp redemptions among different trading areas.

In fiscal year 1978, as in fiscal year 1976, significant differences were found in regional shares of different types and sizes of food stores and the proportions of their food stamp redemptions to other food sales. In both fiscal years, regional differences were too substantial to be due to chance. For example, together the Southeast and Mid-Atlantic regions accounted for at least half of all food stores accepting food

stamps with annual sales under \$250,000. Analogous disparities were found for the other distributions.

In contrast, the amount of change between 1976 and 1978 shown by each distribution was so small it must be attributed to chance. Even so, if changes in regional shares persist over time, differences might become significant.

Analysis of the Impact of Food Stamp Redemptions on Food Stores and Regions, Fiscal Year 1978

Paul E. Nelson*

INTRODUCTION

Almost \$7 billion worth of food stamps were redeemed by food stores which accepted them throughout fiscal year (FY) 1978. Redemptions amounted to 5.5 percent of the total food sales of these 211,000 stores (derived from appendix tables 1-3). Where recipients spend their food stamps thus is of concern not only to the program's administrators, but to food retailers as well. Moreover, redemptions are substantial enough to have a regional economic impact.

An earlier report (3)^{1/} based on data for FY 1976 demonstrated that food stamp expenditures affect the distribution of food sales among regions; and within regions, among different kinds of food stores. Data problems in that report precluded analysis that would have at least partly explained some of the differences observed in ratios of food stamp redemptions to total food sales among different store trading areas. Moreover, questions have since been raised as to whether or not 1976 was an exceptional year.

This report serves two purposes. It presents FY 1978 data on food stamp redemptions to update the earlier report and to confirm its conclusions on the differential impact of redemptions. In addition, this report explores the importance of the socioeconomic characteristics of households in the stores' immediate trading areas.

The analysis sheds light on factors which affect store patronage by low-income food shoppers. It shows the extent to which smaller neighborhood stores prevail and larger chain supermarkets are absent from low-income, black, and Hispanic neighborhoods. It also examines the degree to which low-income shoppers lack access to a car and thus, opportunity to shop more competitively outside their immediate neighborhoods.

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^{1/} Underscored numbers in parentheses refer to items in the References section.

The analysis of 1976 data showed that the greatest impact of redemptions was on the New England, Mid-Atlantic, and Southeast regions. Also, small, and particularly small independent stores, received a greater proportion of total food stamp redemptions than they did of the food sales paid for by cash and checks (referred to as cash/check receipts). The notable exception was large chain establishments with at least \$10 million annual gross sales, which received a significantly greater proportion of food stamp redemptions than their other food sales would indicate (3, p. 25).

Carrying forward these conclusions, this report will address five questions which the earlier report could not treat.

- (1) To what extent do the immediate trading areas in which chains are located differ with respect to socioeconomic characteristics from those where independents chiefly are located?
- (2) To what extent do socioeconomic differences among trading areas explain variations in ratios of average food stamp redemptions to total food sales found among trading areas?
- (3) Do different kinds of stores, of different sizes, receive a pro rata share of both their size category's total food stamp redemptions and cash/check receipts?
- (4) Did the regional share variations found in 1976 continue in 1978?
- (5) Did significant changes take place in food store numbers, food sales, food stamp redemptions, and cash/check receipts between 1976 and 1978?

The first five sections consider these questions. Detailed analysis of the changes between fiscal years 1976 and 1978 will be found in the Appendix that follows.

DATA AND METHODS OF COMPARISON

Data for all stores accepting food stamps during the entire fiscal year, supplied by the FNS Minneapolis ADP Field Center, included numbers of food stores by type, size, and region, and total food sales, and total food stamp redemptions, also by region. Total food sales were composed of food stamp redemptions and cash/check receipts. Socioeconomic data for the trading areas are 1969 Census data which were aggregated by zipcode areas by the Claritas Corporation (8).

Zipcode areas were used in order to provide a crude proxy of the immediate trading area of each store located within them. However, stores for which only a post office box

address was found were excluded. In contrast to chains and independents, the zipcodes reported for dairy and bakery routes and mobile stores typically represent the owner's residence. Hence, questions 1 and 2 above were addressed only for chains and independents.

Because all of the data in this report refer only to stores which accepted food stamps during the entire fiscal year, the few stores not participating throughout the year are not represented. Sales data are only for food products, thus excluding substantial sales of nonfood items sold by grocery stores, and not available for purchase with food stamps.

Store categories are defined as follows:

- (1) Large chains--All retail food firms with 11 or more establishments and total annual gross sales for combined establishments of at least \$1 million.
- (2) Other chains--All retail food firms with 11 or more establishments and total annual gross sales for combined establishments of less than \$1 million. 2/
- (3) Independents--All food firms which had fewer than 11 establishments. For independents and all other kinds of food stores, no annual sales sizes are incorporated in the definitions.
- (4) Dairy routes--All firms which serviced their customers with dairy products primarily at their residences. Products were transported by motor vehicles.
- (5) Bakery routes--Identical to the dairy route definition except that the primary products are baked goods.
- (6) Other mobile stores--All firms (other than dairy or bakery) which serviced customers at their residences or on the street by relying upon wheeled vehicles for transportation of products. This category included the South's "rolling stores," along with pushcarts sometimes seen in urban areas.

2/ This store category included not only grocery chains, but also seafood and fish firms with 11 or more establishments per company, and some large baking firms which sold products through factory outlets. Some stores such as fruit and vegetable stands appeared to be in highly seasonal markets. These firms had relatively low annual food sales because of the limited time of operation each year.

- (7) Miscellaneous--All firms other than chains and independents whose sales were made from stationary facilities. This category included military commissaries, roadside stands, nonchain fish and seafood stores, and facilities within established farmers' markets, usually in central cities.

Regional data in this report are based on seven regions defined by the FNS, as shown below.

Figure 1--Food and Nutrition Service Regions

<u>Mountain-Plains</u>	<u>Southeast</u>	<u>Midwest</u>
Colorado	Alabama	Illinois
Iowa	Florida	Indiana
Kansas	Georgia	Michigan
Missouri	Kentucky	Minnesota
Montana	Mississippi	Ohio
Nebraska	North Carolina	Wisconsin
North Dakota	South Carolina	
South Dakota	Tennessee	
Utah		
Wyoming		
<u>Mid-Atlantic</u>	<u>Western</u>	<u>New England</u>
Delaware	Alaska	Connecticut
District of Columbia	Arizona	Maine
Maryland	California	Massachusetts
New Jersey	Hawaii	New Hampshire
New York	Idaho	Rhode Island
Pennsylvania	Nevada	Vermont
Virginia	Oregon	
West Virginia	Washington	
<u>Southwest</u>		
Arkansas		
Louisiana		
New Mexico		
Oklahoma		
Texas		

This report includes no data from territories such as Puerto Rico and the Virgin Islands. When FNS includes data from the territories in tabulations, Puerto Rico and the Virgin Islands are added to the Mid-Atlantic region, and Guam, American Samoa, and the Trust Territories to the Western region.

SOCIOECONOMIC
CHARACTERISTICS OF
IMMEDIATE TRADING
AREAS

The question, "Are the trading areas surrounding independents different from those where chains are located?" was raised to help explain the disproportionate redemption of food stamps received by independent stores compared to chain stores. (As has been discussed, "independent" and "chain" stores are those participating in the food stamp program throughout fiscal year 1978.)

There are no data to pinpoint just how many food stamp households are located within each store's trading area. However, data relevant to describing the shopping practices and the socioeconomic characteristics of a trading area were available. The following section examines this evidence to determine if the immediate environment of a store influences its ratio of food stamps to total food sales.

The characteristics of the immediate trading area examined are, percentage of households without regular access to a car, percentage of households which are black, percentage of households which are Hispanic, the ratio of white collar to blue collar heads of households, percentage of households with at least 10 years consecutive residence in the area, and median annual household income. Data come from the 1970 Population Census, and were aggregated into zipcode areas, in contrast to Census tracts, by the Claritas Corporation of Arlington, Va.

All but two immediate trading area characteristics--percentage of black and percentage of Hispanic households ^{3/}--were included in a regression model used to evaluate the contribution that these characteristics make toward explaining the observed differences in the ratio of average trading area food stamp redemptions to average area food sales. The model is presented in the next section of this report.

Proportion of White
to Blue Collar
Workers

The white/blue collar index for any trading area is derived by dividing the number of blue collar workers in the area into the area's number of white collar workers. If there were an equal number, of course, the index would read 100.0. Five index categories were specified for making the comparisons. Because a considerable number of stores were found in neighborhoods that

^{3/} The socioeconomic data were made available in a form which at times enabled a simple tabulation even when it precluded use in a regression computation. For instance, even though a cell had no actual numbers because the Census Bureau had suppressed the figures, the tabulation of the number of chains and independents in the same zipcode trading area as the category suppressed could be made because the store data were from a different source.

About 51 percent of the chains were located in trading areas which had an index of 100 or more (more than one-half of the households were white collar) compared with 21.6 percent of independents. An association of chains with trading areas where white collar workers reside (table 1) reflected the paucity of chains in the areas of highest blue collar concentration rather than the absence of independents in any trading area. Independents predominated in every trading area. That is, in each of the trading areas with a white/blue collar index over 100, independents accounted for the majority of chains plus independents, ranging from 57.6 percent for the index category of 150 and above, 79.2 percent for the 100.0 category, to a high of 95.1 percent in categories of blue collar concentration (table 2).

Eighty-nine percent of all chains were located in trading areas where more than three-fourths of households had regular access to a car compared with 70.2 percent in the areas of independents. Only 2.1 percent of all chains compared with 7.5 percent of independents were in trading areas where the proportion of households without access equaled or exceeded half of all households (table 3). This suggests that chains not only are primarily located in white collar neighborhoods, but also in those with a high percentage of households with regular access to a car.

Table 1--Distribution of chain and independent food stores among trading areas classified by white/blue collar index

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Consecutive Years
of Residence

Nearly 60 percent of all chains were located in trading areas where less than 34 percent of the households had resided for at least 10 consecutive years (although not necessarily in the same residence). This was a much larger share than the independents' 40 percent. Only 0.1 percent of the chains were in trading areas where at least 64 percent of the households had resided for 10 or more consecutive years (table 5), compared with 0.6 percent for independents.

These distributions in part reflect the suburban growth between 1960 and 1970. The chains migrated to the shopping centers as housing developments proliferated. The 1980 Census data will indicate the extent to which these movements of the sixties continued during the seventies.

Within each percentage category, the proportion of total chains and independents accounted for by independents was high. The percentages ranged from 76.6 percent of these stores in trading areas where the fewest households had resided for at least 10

Table 2--Distribution of chain and independent food stores within trading areas classified by white/blue collar index

		White/blue collar index category				
Kind of food store	:	Less than 50	50.0- 99.9	100.0	100.1- 149.9	150 and over
	:					
	:					
	:					
	:					
	:					
Chains	:	4.9	14.5	20.8	26.5	42.4
Independents	:	95.1	85.5	79.2	73.5	57.6
Total	:	100.0	100.0	100.0	100.0	100.0
	:					

Source: (8)

Table 3--Distribution of chain and independent food stores among trading areas classified by percentage of households without regular access to a car

Kind of food store	Percentage without access to a car				
	Less than 25	25.0- 49.9	50.0- 74.9	75.0- 100.0	Total
Chains	89.0	8.9	1.6	0.5	100.0
Independents	70.2	22.3	5.4	2.1	100.0

Median Household
Income of Trading
Areas

Within each median income category, with the exception of the highest median income group which had a 50-50 distribution, independents again accounted for the greatest proportion of chains plus independents. For example, independents accounted

Kind of food store	Percentage without access to a car			
	Less than 25	25.0-49.9	50.0-74.9	75.0-100.0
Chains	20.8	7.6	5.9	4.9
Independents	79.2	92.4	94.1	95.1
Total	100.0	100.0	100.0	100.0

Kind of food store	Percentage of households with at least 10 consecutive years of residence in trading area			
	Less than 34	34-63.0	64.0-100.0	Total
Chains	59.4	40.5	0.1	100.0
Independents	40.5	58.9	.6	100.0

for 95.3 percent of all stores located in trading areas with median incomes less than \$5,000 per annum and 84.5 percent for those with a median income of \$5,000-\$9,999 (table 8). Thus,

Table 6--Distribution of chain and independent food stores within trading areas classified by length of household residence

	:	Percentage of households with at least 10				
Kind if food	:	<u>consecutive years of residence in trading area</u>				
store	:	Less than	:	34.0-	:	64.0-
	:	34	:	63.0	:	100.0
	:					
	:	<u>Percent</u>				
	:					
Chains	:	23.4		12.5		1.8
Independents	:	76.6		87.5		98.2
Total	:	100.0		100.0		100.0
	:					

Source: (8)

Table 7--Distribution of chain and independent food stores in trading areas classified by median income

	:	Median annual household income of trading areas				
Kind of food	:	Less than : \$5,000-: \$10,000-: \$25,000 :				
store	:	5,000	:	\$9,999	:	\$24,999 : and over: Total
	:					
	:	<u>Percent</u>				
	:					
Chains	:	4.8		61.5		33.7 <u>1/</u> 100.0
Independents	:	20.4		69.4		10.2 <u>1/</u> 100.0
	:					

1/ Less than 0.1 percent.

Table 8--Distribution of chain and independent food stores within trading areas classified by median household income

	<u>Median annual household income of trading areas</u>				
Kind of food store	Less than \$5,000	\$5,000- \$9,999	\$10,000- \$24,999	\$25,000 and over	
					<u>Percent</u>
Chains	4.7	15.5	40.4	50.0	
Independents	95.3	84.5	59.6	50.0	
Total	100.0	100.0	100.0	100.0	

the low-income neighborhoods have more independents from which to choose than they have chains.

Ethnic Composition
of Households in
Trading Area

The ethnic distribution of households was available only for blacks and Hispanics. In the case of blacks, 88.1 percent of all chains were located in trading areas with less than one-fourth of black households, and 3.4 percent with trading areas where at least one-half were black. Corresponding percentages for the independents were 68.9 and 13.1 percent (table 9).

The independents accounted for 90.2 percent of all specified food stores within trading areas where between one-fourth and one-half of the households were black, and for 94.3 percent for the areas in which one-half or more were black. For trading areas which had less than one-fourth black households, independents accounted for 77.1 and chains for 22.9 percent of specified stores (table 10). Clearly, there are few chains in

Table 9--Distribution of chain and independent food stores among trading areas classified by percentage of black households

Kind of food store	Percentage categories of black households			
	Less than 25	25.0-49.9	50.0-100.0	Total
	<u>Percent</u>			
Chains	88.1	8.5	3.4	100.0
Independents	68.9	18.0	13.1	100.0

Table 10--Distribution of chain and independent food stores within trading areas classified by percentage of black households

Kind of food store	Percentage categories of black households		
	Less than 25	25.0-49.9	50.0-100.0
	<u>Percent</u>		
Chains	22.9	9.8	5.7
Independents	77.1	90.2	94.3
Total	100.0	100.0	100.0

Source: (8).

trading areas where black households account for more than one-fourth of the households; there the stores typically are independents.

There were even fewer chains and independents located in trading areas where Hispanic households were concentrated. Only 1.6 percent of the chain establishments were found in trading areas at least 50 percent Hispanic. Only 3.7 percent of the independents were so located (tables 9 and 11). It is possible that the "miscellaneous store" group, which includes fish and seafood markets, push carts, farmers' markets and other vendors, are the primary food merchandisers servicing the areas with many Hispanic households. Independent stores are not as numerous as in black trading areas (tables 10 and 12).

Implications

The foregoing analysis confirms that there are distinct differences in the socioeconomic characteristics of trading areas where chains or independents are concentrated. Chains are

Table 11--Distribution of chain and independent food stores among trading areas classified by percentage of Hispanic households

Kind of food store	Percentage categories of Hispanic households			
	Less than 25	25.0-49.9	50.0-100.0	Total
	<u>Percent</u>			
Chains	94.8	3.6	1.6	100.0
Independents	90.5	5.8	3.7	100.0

Table 12--Distribution of chain and independent food stores within each trading area by percentage of Hispanic households

Kind of food store	Percentage categories of Hispanic households		
	Less than 25	25.0-49.9	50.0-100.0
	<u>Percent</u>		
Chains	23.3	15.3	11.3
Independents	76.7	84.7	88.7
Total	100.0	100.0	100.0

Source: (8).

concentrated most heavily in trading areas characterized by high proportions of white collar, higher income households, households with access to a car, and low proportions of black and Hispanic households. Many are located in the more recently developed suburban fringe where relatively few households have resided within the same trading area at least 10 consecutive years. The converse was more typical for the independents, although independents are found in all trading areas. Chi-square tests were conducted for each distribution to determine if the variations observed among the categories of which it was composed could be attributed to chance. In each instance the differences were found to be statistically significant.

THE RELATION OF SPECIFIED SOCIO- ECONOMIC FACTORS AND RATIOS OF FOOD STAMP REDEMPTIONS TO FOOD SALES

The preceding section demonstrated that the trading areas of independent stores and of chain stores have different household characteristics. This section will assess the extent to which such differences explain variations in the ratios of redemptions to food sales. There is a 7.23-percent range between the highest and the lowest ratios of food stamp redemptions to total food sales for FY 1978. The highest ratio, 10.29 percent, was registered for stores with less than \$250,000 gross annual sales located in the Southeast. The lowest ratio 3.06 percent, was located in the Mountain-Plains for stores with at least \$1 million annual gross sales. Nationwide, the average ratio for the three store categories were: 8.24 percent for stores with annual sales of less than \$250,000; 6.07 percent for the \$250,000-\$999,999 category; and 5.1 percent for stores with at least \$1 million in sales (computed from app. tables 6 and 7).

Tests of differences found among all regions and sizes of food stores were found to be statistically significant. However, Chi-square tests did not identify factors which necessarily explained much of the observed differences. In contrast, a well-specified multiple regression associates differences observed in a dependent variable with differences in independent variables, and indicates for each independent variable how much it may contribute toward an explanation of the differences observed among the values of the dependent variable.

A regression model was constructed which included as independent variables specified socioeconomic data likely to have an association with the differences in observed values of the dependent variable, that is, the ratio of food stamp redemptions to total food sales for each trading area.

Model-Related Assumptions

Among the necessary assumptions of the model was treatment of the zipcode area in which a store is located as that store's immediate trading area. The characteristics of the trading area were expressed in terms of specified socioeconomic variables,

such as percentages of households without regular access to a car.

The analysis applies only to chains and independents because their zipcodes refer to a definite location and trading area. In the case of dairy routes, mobile stores, etc., the zipcode often is for the driver, or driver-owner, and not for the area served by the route.

Variables in
Regression Model

Eleven independent variables were considered in the regression model. The basis for choosing each is discussed below.

Dependent
Variable

The dependent variable, as has been said, is the ratio of food stamp redemptions to total food sales for stores in each trading area fully participating in the food stamp program. In the regression model, concern was focused upon the variations among trading areas. The variation within trading areas was removed by averaging. Thus, for each trading area the sum of the food stamp redemptions for all fully participating food stores located within the area is divided by the sum of the total food sales of the same food stores to obtain the ratio to be explained.

Independent
Variables

- (1) Size of household-- Food stamp eligibility is determined primarily by size of income and number of people in the household. Thus, the greater the proportion of large households within the area, the larger will be the expected number of food stamp participants, and the larger will be the expected average ratio of trading area food stamp redemptions to total food sales.
- (2) Income--The two income categories which supplied the greatest numbers of participants nationwide in FY 1976 were
- (3) "less than \$5,000" and "\$5,000-\$9,999." These categories have been adopted, each being entered as a separate variable. In each instance the higher the proportion of such households in the area, the higher will be the food stamp redemptions to total food sales ratio for the trading area.
- (4) Education--Education is linked to employability and level of earnings. Areas where many households heads have no more than 8 years of education are likely to have more food stamp households than other areas. However a sufficiently high intercorrelation with the income variables was found to preclude the use of both the educational and income variables.
- (5) Kind of employment--White collar workers are less prone to unemployment, and historically tend to experience shorter

periods of unemployment when they are furloughed. An index was computed by dividing each trading areas's total number of white collar workers by its total number of blue collar workers on the assumption that a trading area with a high index value would have fewer participating households than those with a low index.

- (6) Percentage of households with a female head--Since households receiving aid to dependent children (AFDC) were categorically eligible to participate in the food stamp program prior to the January 1978 elimination of the purchase requirement, areas with a high proportion of categorically eligible households tend to have higher participation rates. The number of female heads of household is a close proxy for families receiving AFDC. Because of the close relationship between female head of household and level of income, it was necessary to choose between this variable and one or both of the income variables.
- (7) Unemployment--Most of the areas in which there is a high proportion of eligibles participating also were areas with high levels of unemployment. However, because unemployment levels differ little among most areas with high unemployment, this variable may not explain much in a cross-section model. (If the model were incorporating a time series in which changes in the level of unemployment could be incorporated this variable could become very important.)
- (8) Percentage of households without regular access to a car--The fewer cars available for regular use by households the more likely the households will shop within walking distance. The lack of a car is also an index of low income. Consequently, the higher the proportion of households in a trading area without access to a car, the higher the ratios of food stamps redemption to food sales for stores in that trading area are likely to be.
- (9) Percentage of renter-occupied units--In urban areas, low-income households typically rent. Furthermore, more multiple than single unit dwellings are available for rent in low-income areas. Consequently, areas in which there is a high proportion of rental housing are areas likely to have high food stamp participation rates.
- (10) Average food sales of participating food stores--Comparisons of stores by size and region in 1976 showed that stores with less than \$1 million annual gross sales had higher ratios of food stamp redemptions to total food

sales than did food stores with annual gross sales of at least \$1 million (derived from app. tables 6 and 7). Consequently, trading areas with smaller average food sales per store were assumed to be associated with higher food stamp redemption ratios.

- (11) Presence of supermarket, dummy variable--If an immediate trading area contained no supermarkets it was given a "0". When it contained at least one supermarket, a food store with at least \$10 million gross sales, the value was given as "1". The data show that at least 34 percent of all food stores in income areas with annual median incomes of at least \$10,000 are chains (including chain supermarkets) and less than 5 percent were located where the median income was less than \$5,000 (table 8). Since about 99 percent of all food stamp households in 1976 had monthly average incomes of less than \$833 (5,p.13), most food stamp households appear to have resided in trading areas where chain supermarkets were uncommon. Consequently, a positive coefficient for this dummy variable would be consistent with the proposition that trading areas with supermarkets draw food stamp patronage from households not residing within their immediate trading areas. A contrast could be made because trading areas containing chain supermarkets usually also contain some independents of less than supermarket size. For example, of all stores located in trading areas with annual household incomes of at least \$10,000, almost 60 percent of all stores were independents (table 8). Most independents have sales of less than supermarket volume (table 1).

Regression Procedure

A stepwise procedure was used. The following description of this particular technique is a paraphrase of (1, p. 391). In this procedure variables are added one at a time provided the variable is statistically significant at the 5-percent level. However, unlike some variations, this particular stepwise technique does not lock each variable into the computation process. After a variable has been added, the stepwise procedure examines all variables already included by previous entries, and deletes any which fail to produce an "F" statistic significant at the 5-percent level. Only after this check has been conducted and the necessary deletions completed will another variable be introduced. This stepwise process ends when no new variable has an "F" statistic significant at the 5-percent level, or when the variable to be added is the one just deleted from it.

Draper and Smith, after discussing alternative stepwise procedures concluded: "We believe this to be the best of the alternative variable selection procedures discussed and

recommend its use. . . . As with all the procedures discussed, sensible judgment is still required in the initial selection of variables. . . ."(2, p. 172).

In addition to the reasons presented above for selecting each independent variable, the simple correlation matrix was used to identify independent variables which had a high association with one another. Three independent variables had a high association (at least a 0.5 simple correlation coefficient) with either the variable "percentage of households with less than \$5,000 annual income," or one another, or both. They were, percentage of households with no more than 8 years of education, percentage of households with a female head, and percentage of households located in renter occupied units. Because each of these independent variables reflects a condition of income, it appeared more relevant to exclude them, and keep the income variables.

The stepwise procedure also resulted in the exclusion of the unemployment rate as a variable. This variable may not be statistically significant because the 26,642 zipcode trading areas may have been too similar with respect to their rates of unemployment. The fact that the standard deviation of their mean rate (computed from (8)) was less than 3 percent supports this explanation.

Regression Results

Seven independent variables accounted for 27.2 percent of the variation observed among trading areas in the average value of the ratio of trading area food stamp redemptions to trading area food sales. These seven were percentage of households with six or more persons, percentage of households with annual incomes of less than \$5,000, percentage of households with annual average income of \$5,000-\$9,999, the white/blue collar index, percentage of households without regular access to a car, average food sales per store in trading area, and the supermarket dummy variable (table 13). The sign of each coefficient agreed with what was anticipated. All variables were statistically significant at less than the 5-percent level.

The percentage of households without regular access to a car contributed most, 19.1 percent, toward an explanation of the differences observed among the trading area ratios of food stamp redemptions to total food sales. Every added percent in the percentage of households in an area without access to a car was associated with an increase of 0.11 percentage point in the dependent variable.

The variable contributing the second largest amount to R^2 (5 percent) was the percentage of households with an annual income of less than \$5,000. Each 1-percent increment of such

Table 13--The relation of specified socioeconomic factors and ratios of food stamp redemptions to food sales

Independent variables	: Regression coefficients : (standard error):	: Contribution to R ²
Percentage households with six persons or more	: 0.1218 : (.0052)	0.0144
Percentage households with annual income less than \$5,000:	: .0903 : (.0025)	.0503
Percentage households with annual income of \$5,000-\$9,999:	: .0237 : (.0040)	.0009
White/blue collar index	: -.0039 : (.0005)	.0031
Percentage households without regular access to a car	: .1124 : (.0029)	.1901
Trading area's average food sales per store	: -.0008 : (.0001)	.0083
Supermarket dummy variable	: 1.6161 : (.0786)	.0046

households in the trading area was associated with a 0.9-percentage point rise in the dependent variable's value. The only other variable which contributed at least 1 percent to R² was the percentage of households in the trading area with at least 6 persons (1.4 percent). Each additional percent of such households was associated with a rise of a 0.12-percentage point in the dependent variable.

Two variables were expected to have an inverse association with the dependent variable. A 10-percent increase in the white/blue collar index was associated with a decrease of 0.039 percentage point in the dependent variable. As expected, white collar workers did not participate in the program as much as blue collar workers. There also was an inverse association between the average volume of food sales per store in a trading area and the dependent variable. For each \$1,000 increase in the average volume of food sales the ratio of area food stamp redemptions to area total food sales was decreased by 0.8 percentage point (derived from table 13).

This is consistent with the previous observation that independent grocery stores with less than \$1 million annual gross sales were obtaining a greater share of the total food stamp redemptions of their store's size category than were independents of supermarket size. Independents accounted for from 77 to 91 percent of total food stamp redemptions of all sales classes under \$1 million, but between 30.4 and 37.7 percent of redemptions for all stores with sales of \$1 million and over (table 14).

The addition of each trading area with at least one supermarket ^{4/} added 1.62 percentage points to the value of the dependent variable. However, additional comparisons with an adjusted model indicated that this association pertains to trading areas in which the total value of food sales by supermarkets accounts for less than 53 percent of the trading area's total food sales. Above 53 percent the value of the dependent variable decreased. These findings are consistent with the proposition that while car access limitations tend to constrain food stamp household patronage to stores within the immediate trading area of the household they do not constrain such households completely. Patronage of trading areas with at least one supermarket appears to have been boosted by food stamp households coming from other trading areas. However, as the number of supermarkets within a trading area's boundaries increases, incoming patronage may be so distributed that average value of the ratio for each supermarket tends to decline.

Implications

Socioeconomic differences explain slightly more than 27 percent of the observed variation in the ratios of the food stamp redemptions to total food sales found among the 26,642 trading areas. The three variables that contributed most were percentage of households without regular access to a car, percentage of households with annual incomes of less than \$5,000, and percentage of households with at least six persons.

COMPARISON OF FOOD STAMP REDEMPTIONS AND CASH/CHECK RECEIPTS BY KIND AND SIZE OF STORE, FISCAL YEAR 1978

If the food stamp program exerts no impact on the kinds of stores participating, the expectation would be that the proportion of total food stamp redemptions reported for each kind of store would be identical to the proportion of cash/check receipts registered for each store category.

In FY 1978, participating households bought food stamps in order to receive free additional (bonus) stamps. Thus households buying their food with the stamps bought more food than they would have purchased if they had not received free bonus stamps. Consequently, if a retail food store received a greater

^{4/} Of the universe of 26,642 trading areas, 8,952, or almost one of every three, had at least one supermarket.

Table 14--Food stamp redemptions and cash/check receipts of stores with full fiscal-year participation by kind of store by gross sales categories, fiscal year 1978

Kind of store	All Stores		\$0-\$24,999		\$25,000-\$49,999	
	Food stamps	Cash/checks	Food stamps	Cash/checks	Food stamps	Cash/checks
	<u>Percent</u>					
Large chains	46.8	51.6	<u>1/</u>		<u>1/</u>	
Other chains	1.6	3.0	0.2	0.5	0.6	1.3
Independents	49.7	41.2	77.3	68.2	87.9	34.4
Dairy routes	.5	1.5	.8	1.1	1.4	3.4
Bakery routes	.1	.1	.7	1.0	1.1	1.2
Other mobile stores						
	.2	.2	9.2	12.4	3.0	3.1
Miscellaneous	1.1	2.4	11.8	16.8	6.0	6.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
	<u>Percent</u>					
	\$50,000-\$99,999		\$100,000-\$249,999		\$250,000-\$499,999	
	Food stamps	Cash/checks	Food stamps	Cash/checks	Food stamps	Cash/checks
	<u>Percent</u>					
Large chains	<u>1/</u>		<u>1/</u>		<u>1/</u>	
Other chains	1.1	2.6	.5	16.9	9.2	21.5
Independents	90.4	86.0	39.6	77.2	86.4	73.7
Dairy routes	2.8	5.0	1.2	1.7	.8	1.5
Bakery routes	.5	.7	.2	.3	<u>2/</u>	.1
Other mobile stores						
	1.4	1.1	.7	.4	.3	.2
Miscellaneous	3.8	4.6	2.8	3.5	3.3	3.0
Total	100.0	100.0	100.0	100.00	100.0	100.0
	<u>Percent</u>					
	\$500,000-\$999,999		\$1,000,000-\$9,999,999		\$10,000,000 or more	
	Food stamps	Cash/checks	Food stamps	Cash/checks	Food stamps	Cash/checks
	<u>Percent</u>					
Large chains	<u>1/</u>		61.7	64.7	67.7	59.2
Other chains	5.3	7.5	<u>3/</u>	<u>3/</u>	<u>3/</u>	<u>3/</u>
Independents	91.0	37.0	37.7	33.1	30.4	25.0
Dairy routes	1.2	2.5	.3	1.1	.3	3.6
Bakery routes	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Other mobile stores						
	.2	.3	<u>2/</u>	.1	.2	1.1
Miscellaneous	2.3	2.7	.3	1.0	1.4	11.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

1/ By definition, large chains have at least \$1 million gross annual sales and thus there are no entries for sales of less than this amount. 2/ Less than 0.1. 3/ Other chains by definition have less than \$1 million annual gross sales and thus have no entry for categories with annual gross sales of at least \$1 million.

proportion of total food stamps than of cash/check receipts, simultaneously it would be receiving a greater share of the food stamp household's increased expenditures for food than would another store whose share of total food stamps was equal to or less than its share of total cash/check receipts.

Table 14 reports food stamp redemptions and cash/check receipts for the 50 States for stores which participated throughout the entire fiscal year 1978. These data are reported by kind of store for all stores regardless of size, and by kind of store, by designated size categories.

Variations by Kind and Size of Store

Independents were the only kind of retail food stores whose share of total food stamp redemptions exceeded their share of total cash/check receipts for store categories of every size. The independents' share of redemptions exceeded their share of cash/check receipts by a range of 3.5 to 12.7 percentage points (table 14).

Large chains, other mobile stores, and miscellaneous stores were the other kinds for which at least some size categories registered a larger share of food stamp redemptions than of cash/check receipts. In the instance of the large chains, supermarkets with annual gross sales of at least \$10 million had 67.7 percent of the total food stamp redemptions of this size of store, 6.5 percent higher than this category's cash/check receipts. Miscellaneous stores with annual gross sales of \$250,000-\$499,999 had 3.3 percent of this category's food stamp redemptions, and 3.0 percent of its cash/check receipts. Other mobile stores had four size categories for which redemptions slightly exceeded cash/check receipts (table 14).

Implications

Stores of different kinds within the same store size group did not receive pro rata shares of their category's food stamp redemptions and cash/check receipts. Chi-square tests of the variations in share indicated that the share differences were too large to be attributable to chance. ^{5/} As in 1976, independents and small stores, particularly small independents, gained most in the sense that their share of their store size group's total food stamp redemptions was greater than their corresponding share of the category's cash/check receipts. It also is noteworthy that in 1978 large supermarkets accounted for almost 76 percent of the Nation's total food stamp redemptions, and 81 percent of its cash/check receipts (app. tables 19 and 20).

VARIATIONS IN REGIONAL SHARES, FISCAL YEAR 1978

The Nation's total number of food stores, food sales, food stamp redemptions, and cash/check receipts were distributed unequally among the seven FNS regions (app. tables 1-20). Chi-square

^{5/} See (4) for a discussion of the use of Chi-square.

tests of these variations showed that the differences were too great to be attributed to chance.

In 1978, the New England, Mid-Atlantic, Southeast, and Southwest regions each had a greater share of the Nation's food stamp redemptions than they did of its cash/check receipts (app. tables 11 and 12). In 1976, however, the Mid-Atlantic region had a greater share of cash/check receipts, unless as reported in (3) Puerto Rico is included as part of this region.

The three regions in 1978 with the largest shares of all U.S. food stores accepting food stamps, and of the total food sales by such stores, were the Mid-Atlantic, Midwest, and Southeast regions (app. tables 9-10).

Implications

Regional share differences found for 1976 were also found for 1978. In fact the differences in most instances were more marked in 1978 than in 1976. However, the consistency between 1976 and 1978 observations support the proposition that the regional distributions apparent in the 1976 data were not unique.

CHANGES AMONG AND WITHIN REGIONS BETWEEN 1976 AND 1978

Changes between 1976 and 1978 in distribution of store numbers and kinds, sales, and redemptions, both within and between regions, are detailed in the Appendix. Such changes may be important to food stamp households because they affect store and product mix accessibility. For example, food stamp households residing in regions that increased their share of the Nation's total number of food stores may discover they have more food stores locally available for shopping, including stores which offer a richer product mix.

Also, changes in the mix of kinds of stores in a region may be important to a household's shopping practices. For instance, if retail stores' shares rise, it is possible that the share of dairy routes decreases. Two points in time do not constitute the basis for discussing a trend. The data suggest that 2 years is not enough time to spot significant changes in kinds and size of stores participating in the food stamp program.

Implications

No statistically significant differences were found between any of the FY 1976 and FY 1978 distributions. While these observed differences may be attributable to chance, it must be recognized that should changes of the observed magnitudes continue for a number of years, at some point significant differences could be detected.

On the other hand, in both years, the differences among regions were significant. For instance, the 0.3-percent difference between New England's FY 1976 share of the Nation's large chains, 5.5 percent, and its corresponding share in FY 1978, 5.2

percent, may be attributed to chance. However, the difference between New England's share and that of each of the other FNS regions was significant in both years. The other six regions similarly have marked contrasts (app. table 9).

Also, although differences between FY 1976 and FY 1978 distributions within regions were attributable to chance, the differences within each region for either year may not be so attributed (app. tables 13-20). The statistically significant differences found and reported by (3) continue to hold for 1978.

The absolute changes between the two years are presented in the Appendix as a data base supporting the text, and as a source of information for persons interested in the detailed changes which took place.

CONCLUSIONS

Data composed of food stamp redemptions, food sales, cash/check receipts, and socioeconomic characteristics of store trading areas were analyzed to obtain a more complete understanding of the consequent market effects of food stamp expenditures. Such analysis has disclosed:

- (1) Socioeconomic characteristics of store trading areas are distinctive. Chains are significantly associated with areas in which there are high proportions of resident white collar workers, middle and high income households, low proportions of black and Hispanics, and few households lacking regular access to a car. While independents are found everywhere, independents are heavily represented in trading areas with socioeconomic characteristics inverse to those where most chains are found. Thus, independents, by being heavily represented where there are many potential (and actual) food stamp participating households, reap a location reward, which is reflected in these stores' food stamp to total food sales ratios.
- (2) However, not all socioeconomic factors were as important as others in further explaining the trading areas' average food stamp redemptions to total food sales ratios. Seven factors explained about 27 percent of the differences noted among the trading areas' average food stamp redemptions to total food sales ratios. The three most important were: percentage of households lacking access to a car, percentage of households with incomes falling below \$5,000, and percentage of households with at least six persons.
- (3) The food stamp expenditures impact, however, was not limited to trading areas. Within trading areas the impact varied by kind and size of store. As found previously (3), the proportion of food stamp redemptions was greater than

the corresponding share of cash/check receipts in independent and small stores, particularly small independent stores. Only in one class of large chains and for certain routes and miscellaneous stores were the shares of food stamp redemptions also more than would be expected from their proportion of cash/check sales. But to keep these observations in perspective, the data also showed that more than three-fourths of both food stamp redemptions and cash/check receipts occurred in supermarkets. Receipt of such a large proportion of total food stamp expenditures suggests that numerous food stamp households bought groceries from supermarkets located outside the market or trading area in which these households reside.

- (4) As was consistent with previous observations (3), the small independent store is especially common in those regions where the household participation rate is high. The Mid-Atlantic, Midwest, and Southeast regions had the largest shares of food stores accepting food stamps, and largest total food sales by participating stores. However, New England, the Mid-Atlantic, Southeast, and Southwest regions each had a greater share of the Nation's food stamp redemptions than they did of its cash/check receipts.
- (5) Data for FY 1978 found regional distinctions even more marked than were found for FY 1976. Especially for within-region variations future observations may confirm that some of the differences noted between years were evidence of significant change and not chance variation. Although the changes noted between FY 1976 and FY 1978 were not statistically significant, they will provide a benchmark against which future changes in food markets, and specifically the purchasing behavior of food stamp participants, can be compared.

REFERENCES

- (1) Barr, A.J., and others. SAS User's Guide. Raleigh: SAS Institute Inc., 1979.
- (2) Draper, N. and H. Smith. Applied Regression Analysis. New York: John Wiley and Sons, 1967.
- (3) Nelson, Paul E. Food Stamp Redemptions: Their Impact on Food Sales by Region, Size, and Kind of Participating Food Stores-Fiscal 1976. AER No. 410. U.S. Dept. Agr., Econ. Stat. and Coop. Serv., Aug. 1978.
- (4) Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Inc., 1956.
- (5) U.S. Department of Agriculture, Food and Nutrition Service. Characteristics of Food Stamp Households, September 1976. FNS-168, Sept. 1977.
- (6) U.S. Department of Commerce, Bureau of the Census. County Business Patterns, U.S., 1977. 1979.
- (7) _____, Bureau of the Census. Current Population Reports. Bureau Series P-25, No. 794, Mar. 1979, tables 2 and 3.
- (8) _____, Bureau of the Census. Economic and Socio-characteristics of U.S. Population 1970.
- (9) Walker, H.M. and J. Lev. Statistical Inference. New York: Holt, Rhinehart, and Wintson, 1953.

APPENDIX: CHANGES
AMONG AND WITHIN
REGIONS, 1976-78

This appendix first compares changes in food stamp redemptions among regions between fiscal years 1976 and 1978, and then where especially noteworthy, compares changes in distributions by kinds of food stores. In considering the changes it must be remembered that there is no sampling error within each fiscal year because these data cover the universe of food stores which participated throughout the entire fiscal year. Of course, some food stores entered or left the universe between the two fiscal years. Also, FY 1976 and FY 1978 may be considered as a sample of two years from the number of years during which the food stamp program has been operative.

Regional Shares

Changes in each region's share of the Nation's food stores, food sales, food stamp redemptions, and cash/check receipts need not be unidirectional or of the same magnitude. In no region were the share changes the same size for each of these items. Only in the Midwest and the Mountain-Plains regions were they unidirectional; in both instances, regional shares declined (app. tables 9-12). The Midwest's share of store numbers and food sales respectively dropped by 0.7 and 0.3 percentage points. Its share of food stamp redemptions, and cash/check receipts respectively decreased 0.6 and 0.4 points. The Mountain-Plains share of food stores and food sales dropped by 0.4 and 0.2 percentage points; its corresponding shares of food stamp redemptions and cash/check receipts each declined by 0.4 and 0.2 percentage points. (see column 8, app. tables 9-12).

Each of the other regions gained in their share for at least one of the data series. The Mid-Atlantic region gained 0.9 percentage point in its share of the Nation's food stores, and 3.1 points in food stamp redemptions. Its share of food sales did not change, but its share of cash/check receipts declined 0.2 points.

The Southwest lost in its shares of food stores, food sales, and food stamp redemptions, (0.5, 0.1, and 1.1 percentage points, respectively) but gained in cash/check receipts by 0.1 percentage point. The Western region lost 0.3 points of its share of both the Nation's food stores and food stamp redemptions, had no change in its share of the cash/check receipts, and gained 0.1 point in its share of total food sales.

New England gained in its share of the Nation's food stores by 0.5 percentage point while increasing its share of food stamp redemptions by 0.1 percentage point. It lost 0.1 point in its share of both food sales and cash/check receipts. The Southeast region gained in its share of food stores, food sales, and cash/check receipts (0.5, 0.6, and 0.8 percentage points, respectively), but lost 0.8 point in its share of food stamp redemptions (See col. 8, app. tables 9-12).

Causes of Regional
Changes

Changes in distribution of food stamp redemptions and food sales resulted from a host of complex, simultaneously interacting factors. A comparison of the New England and Southeast regions highlights two or three important relationships which partially explain these shifts in regional shares.

New England's gain in its share of retail food stores reflected a net increase of 1,304 additional participating food stores. ^{6/} Over 1,100 of the added program participants were independents, but a number of other categories contributed, including 72 other chains with less than \$1 million sales, bakery routes, other mobile stores, and miscellaneous stores (app. table 1). Thirteen dairy routes and 102 large chains with annual gross sales of at least \$1 million ceased to participate between FY 1976 and FY 1978.

Thus, new participating stores consisted primarily of stores smaller in size than those which ceased to participate. In contrast, New England's decline in its share of the Nation's total food sales resulted from relatively slower growth. New England's food sales increased by 15.3 percent between FY 1976 and FY 1978, a rate exceeded by four of the six other regions (app. table 2).

The increase in New England's share of total food stamp redemptions in part reflects overall economic conditions which have prevailed within the region over quite a few years. In 1970-77, the number of persons in the 18-64 years age group increased by 10.7 percent while the number of jobs provided for working age persons by reporting units with a payroll rose by 4 percent (^{6/}).

Some noteworthy differences between New England and the Southeast are related to the change in numbers of participating stores in each region and their food sales experience. Whereas New England lost the net participation of 102 large chain stores, the Southeast gained 71. Both regions gained store participants from "other chains", the Southeast gaining 1,859 more than New England. The converse held true for independents. New England added 700 more independent participating stores than did the Southeast. Both regions lost participating dairy routes, but the Southeast lost 36 more than New England. In the case of bakery routes, the Southeast lost 27 whereas New England gained 1. For other mobile stores and

^{6/} New England's share could have risen without a change in store numbers if the numbers of stores from other regions had had a net decline.

miscellaneous stores combined, the Southeast gained 311 more store participants than New England (app. table 1).

New England's food sales rose by 15.8 percent, but accounted for only 5.8 percent of the national increase in food sales by participating stores. The Southeast's, 20.1-percent increase in food sales accounted for 19.6 percent of the total increase. Food chain sales contributed much more to the Southeast region's food sales growth than they did in New England. Large chains in the Southeast accounted for 58 percent of this region's 20.1-percent sales growth. The reverse was true of the contribution made by independents.

General economic conditions which have prevailed in the Southeast for some years appear to explain much of the 0.8-point decrease in its share of the Nation's total food stamp redemptions (app. table 3). During the 1970-77 period, the region's growth in the number of persons aged 18 through 64 was 12.8 percent. Simultaneously, this region's new job opportunities rose by 22 percent (6,7)

Changes Within Regions

While regional shares of the Nation's total number of retail food stores, food sales, food stamp redemptions, and cash/check receipts were changing, corresponding changes were taking place within each region's distribution by kind of retail food stores.

Nationwide, participating large chains lost slightly in their shares of store numbers and food stamp redemptions during 1976-78 (app. tables 1,3). Their shares of food sales and of cash/check receipts remained constant at 51.4 percent and 51.6 percent, respectively. Other chains increased their share of participating food stores, food sales, cash/check receipts, and food stamp redemptions. The independents lost in their share of participating food stores but gained in food sales, food stamp redemptions, and cash/check receipts. Dairy and bakery routes either lost or maintained their shares. They did not gain in any region. Bakery routes maintained their share in both cash/check receipts and food stamp redemptions. Other mobile stores gained in their share of each. Miscellaneous stores gained in their share of participating food stores but lost in both food sales and cash/check receipts, while maintaining their share of food stamp redemptions (derived from app. tables 1-4).

The shares reported above for various kinds of retail food stores reflect the analogous changes in share composition by kinds of stores for each region.

Retail Food Stores Accepting Food Stamps

In each region in FY 1978, large chains had a smaller proportion of total participating food stores. Their drop in shares ranged from 0.1 point in the Mountains-Plains to 1.8 points in New

England (derived from app. table 13). Other chains increased their share of participating food stores in all regions except New England, where their share declined by 0.5 point. (app. table 13).

Independents gained in their share of participating food stores in four, but lost in three regions. The New England, Mid-Atlantic and Western regions registered share gains, respectively, of 2.3, 1.4, and 0.6 points. The Mountain-Plains, Southeast, and Southwest regions reported share losses of 1.3, 3.5, and 1.0 points (app. table 13).

Dairy and bakery routes either lost or maintained their share in each region. The Mountain-Plains, Southeast and Western regions registered losses in both dairy and bakery routes (app. table 13). The New England, Mid-Atlantic, Midwest, and Southwest regions maintained their shares for bakery routes, but lost dairy routes (app. table 13).

Other mobile stores registered gains only in the Southeast and Western regions. The Southwest and Midwest maintained their share. In the New England, Mid-Atlantic, and Mountain-Plains regions mobile stores lost in their share of participating food stores (app. table 13).

Miscellaneous food stores lost in their share of food stores in the Southwest and Western regions, but gained in all others (app. table 13).

Food Sales

Although large chains lost in their share of food stores in each region, in four regions their share of food sales rose--(Mountain-Plains, Southeast, Southwest, and the West).

Other chains maintained their share of regional food sales in the Mid-Atlantic region, and gained in New England and the Southeast (app. table 14).

The independents' food sales share rose in three, but lost in four regions. Shares increased for the New England, Mid-Atlantic, and Midwest regions (app. table 14).

Dairy routes maintained their share of the region's total food sales in the Midwest region, but lost elsewhere. Bakery routes had such small shares that in four regions comparisons were not possible because in the rounding process they were lost. Other mobile stores either maintained their shares, as in the Midwest, Mountain-Plains, and Southeast regions, or lost, as in New England, Mid-Atlantic, Southwest and Western regions.

Miscellaneous stores gained in New England and maintained their share in the Southeast, but lost in the Mid-Atlantic, Midwest, the Mountain-Plains and Western regions.

Food Stamp
Redemptions

Participating large chains lost in their share of each region's total food stamp redemptions in the New England, (-0.3 percentage point) Mid-Atlantic, (-4.2), Midwest (-1.5), and Southeast (-0.2) regions. Gains were posted in the Mountain-Plains (2.1) and Western (0.8) regions. In the Southwest, large chains maintained their share (app. table 15).

Except in New England, where other chains lost in their share of food stamp redemptions, other chains gained in all others, the increments ranging from 0.1 in the Mid-Atlantic to 0.6 in the Southeast region (app. table 15).

Independents gained in the New England, (0.3), Mid-Atlantic (4.2) and Midwest (1.5) regions. They lost respectively in the Mountain-Plains (-1.8), Southeast (-0.3), Southwest (-0.1), and Western (-0.9) regions (app. table 15).

Participating dairy routes lost in their share of each region's total food stamp redemptions: by 0.1 point in New England, the Mid-Atlantic, and Southeast; and by 0.2 point in the Midwest, Mountain-Plains, Southwest and Western regions (app. table 15).

Bakery routes lost by 0.1 point in the Western region. The rounding process precluded comparisons in the other regions because the shares were too small to round up to 0.1.

Both other mobile stores and miscellaneous stores maintained their share of food stamp redemptions in the Southeast and Mid-Atlantic regions. Other mobile stores also maintained their share in the Mountain-Plains region. Both kinds of stores gained 0.1 point in New England. Other mobile stores gained by 0.1 point in the Southwest and 0.2 point in the Western region. Miscellaneous stores lost by 0.1 point in both the Southwest and Western regions, and by 0.5 point in the Mountain-Plains region.

Cash/Check
Receipts

Participating large chains lost in their share of cash/check receipts in the New England (2.2 percentage points), Mid-Atlantic (-2.0), and Midwest (-0.9) regions (app. table 16). Large chains gained in share by 1.4 points in the Mountain-Plains and Southeast regions. In the Southwest they gained 1.7 points and in the Western region 1.6 points (app. table 16). Participating other chains maintained their share in the Mid-Atlantic region. In all others their share grew between 0.1 and 1.0 point. Independents lost in their share of cash/check receipts in the Mountain Plains (-1.1), Southeast (-1.6), Southwest (-1.4), and Western (-1.3) regions. They

gained in New England (2.4), the Mid-Atlantic (2.8) and Midwest (0.8) regions. All dairy routes lost in their regional shares, ranging from 0.1 for the Midwest to 0.6 point for the Mid-Atlantic, Southeast, and Southwest regions.

Bakery routes maintained their share in the Mountain-Plains, Mid-Atlantic, Southeast, and Western regions. Comparisons were not possible for other regions because of the rounding process. Other mobile stores gained in their share of the region's total cash/check receipts by 0.1 point in the New England, Mid-Atlantic, Midwest, and Southwest regions; maintained their share in the Mountain Plains and Western regions, and lost by 0.1 point in the Southeast. Miscellaneous stores lost in their share of cash/check receipts in all but the New England region, where they increased their share by 0.1 point (app. table 16).

These within-region comparisons show that other chains were the most consistent in posting share gains in all of the distributions. Gains were greatest in the Mountain-Plains, Southeast, Southwest, and Western regions. This may be linked to the fact that substantial economic growth in these regions has been relatively recent.

Retail Food Stores
Compared by Size
and Region,
Fiscal Year 1978

The preceding retail food store comparisons by kind of store and region provide a necessary but not a complete data base for identifying food stamp redemption impacts. Distributions by size of store and region will identify which store sizes account for the largest proportion of all participating retail food stores and the greatest share of food sales, food stamp redemptions, and cash/check receipts.

While appendix tables report eight store-size categories measured in terms of annual gross sales, the following text discussion focuses on three size categories: less than \$250,000 annual gross sales, \$250,000-\$999,999, and \$1 million and over. These size categories include all participating retail food stores, from the smallest farmer's roadside stand to dairy routes, and supermarkets.

The first two size categories probably encompass most bakery routes, dairy routes, mobile stores, farmers' markets, and mom and pop stores. The second size category also probably includes a majority of the "superettes" and convenience type stores. The largest category encompasses all supermarkets.

National
Distributions

Of all retail food stores that participated throughout FY 1978, 68.3 percent had annual gross sales of less than \$250,000, 20.8 percent had sales of \$250,000-\$999,999, and 15.9 percent had sales of at least \$1 million (app. table 6, U.S. column).

While the majority of stores had annual gross sales of less than \$250,000 they accounted for 7.8 percent of food sales, 7.6 percent of cash/check receipts, and 11.7 percent of food stamp redemptions (app. tables 5-8).

Stores with sales falling within the \$250,000-\$999,999 category accounted for 20.8 percent of all food stores, 11.5 percent of food sales, 11.4 percent of cash/check receipts, and 12.7 percent of food stamp redemptions.

Stores with at least \$1 million of annual gross sales accounted for but 15.9 percent of fully participating retail food stores, 80.7 of their food sales, 81.0 percent of their cash/check receipts, and 75.6 percent of their food stamp redemptions. These data indicate that regardless of their residence, and the location of supermarkets, large numbers of food stamp households buy food in supermarkets.

Regional Distributions

The Mid-Atlantic and Southeast regions together accounted for over one-half of all retail food stores with less than \$250,000 annual gross sales, their food sales, food stamp redemptions, and cash/check receipts (app. tables 5 and 7). The Midwest and Southwest combined had similar distributions, together accounting for about one-fourth of all food stores of this category, their food sales, food stamp redemptions, and cash/check receipts.

Both New England and the Mountain-Plains had similar shares. Together they accounted for about 12 percent of stores of this size, their food sales, and cash/check receipts, and for 8.2 percent of their food stamp redemptions (app. tables 5-8).

The Western region's share ranged from 8 percent of the category's food stamp redemptions to 11.7 percent of the cash/check receipts. Thus, for stores with annual gross sales of less than \$250,000, two regions, the Mid-Atlantic and the Southeast, had the greatest share of stores, sales, redemptions, and cash/check receipts. In combination the Southwest and Midwest also were important, together accounting for at least one-fourth of each of the distributions (derived from app. tables 5-8).

The distributions were somewhat more evenly allocated for the stores with annual gross sales falling within the \$250,000-\$999,999 category. For example, the combined Mid-Atlantic and Southeast regions' shares of food sales and cash/check receipts were 38.7 and 38.0 percent, respectively. The corresponding figures for the combined Midwest and Southwest regions were 31.3 and 31.4 percent. For store numbers and food stamp redemptions the allocation was not as even. The combined

shares of the Mid-Atlantic and Southeast regions registered 52.5 and 47.8 percent, while corresponding shares for the combined Midwest and Southwest regions were 30.5 and 30.4 percent (app. tables 5-8).

The combined New England and Mountain-Plains regions registered shares ranging from 10.3 percent of the category's food stamp redemptions, to 15.7 percent of its total cash/check receipts. This is relatively similar to the share these regions had for the store category of smallest size (app. tables 5-8).

The Western region accounted for 16.1 percent of food stores, food sales (14.6), food stamp redemptions (11.5), and cash/check receipts (14.9) for this size category.

For middle sized stores, Mid-Atlantic and Southeast regions again accounted for the greatest proportion of each of the distributions for the \$250,000-\$999,000 category. However, this time their shares were much nearer to being matched by the Midwest and Southwest regions.

For stores with at least \$1 million annual gross sales the combined Mid-Atlantic and Southeast regions accounted for 38.8 percent of their category's total number of food stores; 38.3 percent of its food sales; 44.1 percent of food stamp redemptions; and 37.9 percent of its cash/check receipts. In like manner, the Midwest and Southwest together accounted for about 30 percent of each distribution. The combination of the New England and Mountain Plains regions, and likewise the Western region, had distributions which were similar to those found for these same regions for stores with annual gross sales of \$250,000-\$999,999. In this instance, New England and the Mountain-Plains together ranged from 11.6 percent of the food store redemptions to 14.1 percent of the category's food stores. The corresponding range for the Western region was from 14.4 to 16.9 percent, respectively, for food stamp redemptions and cash/check receipts.

Distributions Within Regions

The distribution of food stores, food sales, food stamp redemptions and cash/check receipts among the three store size categories within each of the regions varied notably in some cases.

The share of all food sales accounted for by those with sales under \$250,000 was smallest in the West, 53.5 percent, and highest in the Southeast, 73.3 percent (app. tables 17-20). The share of food sales of the under \$250,000 category, ranged from 5.5 percent in the Western and Midwest regions to 12.1 percent in the Southeast.

Stores of this smallest size category accounted for from 7.1 percent of food stamp redemptions in the Western region to 17.3 percent in the Southeast. Of each region's total cash/check receipts the share attributable to stores under \$250,000 sales was lowest for the Midwest, 5.3 percent, and highest in the Southeast, 11.7 percent.

The regions with the highest proportion of total food sales flowing to stores with annual sales of \$250,000-\$999,999 ranged from 13.1 percent in the Mountain-Plains to 10.5 percent in the West.

Food stamp redemptions for this size of store varied from 82.0 percent of the region's total for the West to 68.3 percent for the Southeast. With the exception of New England's 80.1 percent, each of the other regions registered between 75 and 80 percent.

The smallest share of each region's total cash/check receipts was registered by the Southeast with 76.1 percent. This compared with shares of 79.0 to 84.1 percent in the other regions.

Supermarkets with sales of at least \$1 million annually accounted for a low of 11.0 percent of stores in the Southeast, and a high of 20.8 percent in the Midwest. Corresponding figures for total regional food sales showed that stores of this size accounted for from 75.6 percent of total food sales in the Southeast to 84.0 percent in the West. In the Southwest, stores of this size accounted for 71.5 percent of this region's food stamp redemptions. In the adjacent Western region, however, this size store's share of its region's food stamp redemptions amounted to 84.1 percent. The regional extremes in cash/check receipts were 76.1 percent in the Southeast and 84.1 percent in the West.

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 2--Total food sales of stores with full fiscal-year participation in the food stamp program, by region and kind, fiscal years 1976 and 1978

Year and region	Large chains	Other chains	Independents	Dairy routes	Bakery routes	Other mobile stores	Miscellaneous	Total
1,000 dollars								
1976:								
New England	3,337,739	235,667	2,591,661	145,829	562	4,653	179,388	6,495,499
Mid-Atlantic	13,893,234	585,524	9,176,689	562,012	22,666	29,405	415,870	24,685,400
Midwest	10,487,655	396,197	10,478,725	490,513	7,601	106,884	276,729	22,244,304
Mountain-Plains	3,947,788	161,629	3,833,396	224,469	7,607	9,896	290,780	8,394,565
Southeast	8,272,750	637,956	7,201,160	255,754	20,209	44,851	352,784	16,785,464
Southwest	5,279,980	309,487	4,946,538	166,866	4,604	9,188	349,717	11,066,380
Western	9,600,835	245,809	6,116,025	155,493	14,656	17,083	915,281	17,065,182
U.S. total, excluding territories 1/	54,819,981	2,572,269	44,344,194	2,000,936	77,905	221,960	2,699,549	106,736,794
1978:								
New England	3,690,227	276,213	3,154,006	138,173	657	11,801	215,255	7,486,332
Mid-Atlantic	15,491,232	697,611	11,423,723	475,478	23,029	56,015	414,533	28,581,621
Midwest	11,763,413	522,746	12,178,378	546,250	7,334	137,756	265,921	25,421,798
Mountain-Plains	4,620,424	250,521	4,235,521	225,344	5,255	14,323	179,792	9,531,180
Southeast	10,228,470	967,537	8,289,357	191,788	15,035	48,815	417,222	20,158,224
Southwest	6,337,489	430,691	5,511,727	131,033	5,226	20,068	375,514	12,811,748
Western	11,521,983	378,174	6,868,844	127,285	12,711	35,441	966,195	19,910,633
U.S. total, excluding territories 1/	63,653,238	3,523,493	51,611,556	1,835,351	69,247	324,219	2,834,432	123,901,536

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its western region whenever data are reported for the territories.

Appendix table 4--Cash/check receipts of stores with full fiscal-year participation in food stamp program, by region and kind, fiscal years 1976 and 1978

Year and region	Large chains	Other chains	Independents	Dairy routes	Bakery routes	Other mobile stores	Miscellaneous	Total
1,000 dollars								
1976:								
New England	3,072,890	225,140	2,391,905	142,356	514	4,273	168,698	6,005,776
Mid-Atlantic	13,053,367	564,132	8,425,102	552,663	21,964	27,151	406,477	23,050,856
Midwest	9,791,861	380,544	9,780,551	481,483	7,179	103,142	274,733	20,809,493
Mountain-Plains	3,777,282	156,058	3,657,955	221,653	7,438	9,582	205,851	8,035,819
Southeast	7,566,652	608,522	6,302,311	248,493	19,071	39,024	348,073	15,132,146
Southwest	4,920,180	297,459	4,433,587	157,095	4,129	8,095	338,776	10,159,321
Western	9,056,495	237,403	5,693,684	148,196	13,014	15,881	880,772	16,045,445
U.S. total, excluding territories 1/	51,238,727	2,469,258	40,685,095	1,951,939	73,309	207,148	2,613,380	99,238,856
1978:								
New England	3,448,571	266,608	2,969,542	135,530	613	11,424	204,941	7,037,229
Mid-Atlantic	14,686,858	673,555	10,569,372	467,717	22,376	53,587	405,152	26,878,617
Midwest	11,170,325	506,913	11,545,571	540,963	7,035	133,753	255,878	24,160,438
Mountain-Plains	4,470,735	244,479	4,093,672	223,508	5,177	14,032	178,022	9,229,625
Southeast	9,610,440	932,690	7,504,026	187,250	14,328	43,537	412,748	18,705,019
Southwest	6,039,321	419,069	5,087,752	124,044	4,847	18,857	366,977	12,060,867
Western	11,031,496	368,476	6,501,809	122,510	11,533	33,070	936,256	19,005,150
U.S. total, excluding territories 1/	60,457,746	3,411,790	48,271,744	1,801,522	65,909	308,260	2,759,974	117,076,945

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 6--Food sales of stores with full fiscal-year 1978 participation, by size category of store and region

Gross sales class	Region							
	New England	Mid-Atlantic	Midwest	Mountain-Plains	Southeast	Southwest	Western	United States
	:	:	:	:	:	:	:	:
\$0-\$24,999	9,083	35,557	25,456	15,166	66,488	23,719	17,305	192,774
\$25,000-\$49,999	22,614	125,773	68,573	31,907	168,455	62,396	47,408	527,126
\$50,000-\$99,999	113,153	544,768	259,345	104,024	502,901	198,338	203,389	1,925,918
\$100,000-\$249,999	468,745	1,811,691	1,039,647	419,250	1,702,649	780,320	833,397	7,055,699
\$250,999-\$499,999	551,362	1,652,169	1,348,026	558,578	1,335,037	857,449	1,130,483	7,453,104
\$500,000-\$999,999	397,891	1,362,458	1,476,153	684,395	1,130,764	780,549	951,171	6,783,381
\$1,000,000-\$9,999,999	5,192,086	19,649,604	18,195,069	6,882,633	14,347,658	9,099,256	15,103,388	88,469,694
\$10,000,000 and over	731,399	3,399,601	3,009,527	835,227	884,270	1,009,720	1,624,093	11,493,837
Total 1/	7,486,333	28,581,621	25,421,796	9,531,180	20,158,222	12,811,747	19,910,634	123,901,533

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 8--Cash/check receipts for stores with full fiscal-year 1978 participation, by size category and region

Gross sales class	Region							
	New England	Mid-Atlantic	Midwest	Mountain-Plains	Southeast	Southwest	Western	United States
	:	:	:	:	:	:	:	:
					<u>1,000 dollars</u>			
\$0-\$24,999	7,747	30,938	21,936	13,865	53,515	18,814	15,050	161,865
\$25,000-\$49,999	20,155	111,050	60,533	29,361	143,454	52,943	43,160	460,656
\$50,000-\$99,999	103,860	489,768	236,234	98,142	440,102	176,296	189,806	1,734,208
\$100,000-\$249,999	441,699	1,672,282	968,811	403,821	1,552,203	716,740	789,757	6,545,313
\$250,000-\$499,999	522,701	1,544,326	1,277,162	540,643	1,250,097	800,004	1,079,950	7,014,883
\$500,000-\$99,999	377,294	1,266,302	1,398,328	662,474	1,026,627	723,666	903,020	6,357,711
\$1,000,000-\$9,999	4,884,587	18,528,581	17,316,636	6,666,371	13,384,766	8,597,903	14,410,395	83,789,239
\$10,000,000 and over	679,188	3,235,370	2,880,796	814,949	854,253	974,500	1,574,013	11,013,069
Total 1/	7,037,231	26,878,617	24,160,436	9,229,626	18,705,017	12,060,866	19,005,151	117,076,944

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 10---Interregional distribution of food sales of stores with full fiscal-year participation in food stamp program, fiscal years 1976 and 1978

[illegible]

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 11-Interregional distribution of food stamp redemptions by stores with full fiscal-year participation in food stamp program, by kind, fiscal years 1976 and 1978

Year and region	Large : chains	Other : chains	Independent :	Dairy : routes	Bakery : routes	Other : mobile stores	Miscellaneous :	Total
<u>Percent</u>								
1976:								
New England	7.4	10.2	5.5	7.1	1.0	2.6	12.4	6.5
Mid-Atlantic	23.5	20.7	20.5	19.1	15.3	15.2	10.9	21.8
Midwest	19.4	15.2	19.1	18.4	9.2	25.3	13.9	19.1
Mountain-Plains	4.8	5.4	4.8	5.8	3.7	2.1	4.6	4.8
Southeast	19.7	28.6	24.6	14.8	24.8	39.3	5.5	22.1
Southwest	10.0	11.7	14.0	19.9	10.3	7.4	12.7	12.1
Western	15.2	8.2	11.5	14.9	35.7	8.1	40.0	13.6
U.S. total, excluding territories 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978:								
New England	7.6	8.6	5.4	7.8	1.3	2.4	13.8	6.6
Mid-Atlantic	25.2	21.5	25.2	23.0	19.6	15.2	12.6	24.9
Midwest	18.6	14.2	18.7	15.6	9.0	25.1	13.5	18.5
Mountain-Plains	4.7	5.4	4.2	5.4	2.3	1.8	2.4	4.4
Southeast	19.3	31.2	23.2	13.4	21.2	33.1	6.0	21.3
Southwest	9.3	10.4	12.5	20.7	11.3	7.6	11.5	11.0
Western	15.3	8.7	10.8	14.1	35.3	14.8	40.2	13.3
U.S. total, excluding territories 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever date are reported for the territories.

Appendix table 12--Interregional distribution of cash/check receipts of food stores with full fiscal-year participation in food stamp program, by kind, fiscal years 1976 and 1978

Year and region	Large chains	Other chains	Independents	Dairy routes	Bakery routes	Other mobile stores	Miscellaneous	All stores
1976:								
New England	6.0	9.1	5.9	7.3	0.7	2.0	6.5	6.1
Mid-Atlantic	25.5	23.0	20.7	28.3	30.0	13.1	15.5	23.2
Midwest	19.1	15.4	24.0	24.7	10.0	50.0	10.1	21.0
Mountain-Plains	7.4	6.3	9.0	11.4	10.0	4.6	7.9	8.1
Southeast	14.7	24.6	15.5	12.7	26.0	18.8	13.3	15.2
Southwest	9.6	12.0	10.9	8.0	5.6	3.9	13.0	10.2
Western	17.7	9.6	14.0	7.6	17.7	7.6	33.7	16.2
U.S. total, excluding territories 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978:								
New England	5.7	7.8	6.1	7.5	0.9	4.0	7.4	6.0
Mid-Atlantic	24.3	19.7	21.9	26.0	34.0	17.3	14.6	23.0
Midwest	18.5	14.9	24.0	30.0	10.6	43.3	9.3	20.6
Mountain-Plains	7.4	7.2	8.5	12.4	8.0	4.5	6.4	7.9
Southeast	15.9	27.3	15.5	10.4	21.7	14.1	15.0	16.0
Southwest	10.0	12.3	10.5	6.9	7.3	6.1	13.3	10.3
Western	18.2	10.8	13.5	6.8	17.5	10.7	34.0	16.2
U.S. total, excluding territories 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 13--Within-region distribution of stores with full fiscal-year participation in food stamp program, by kind, fiscal years 1976 and 1978

Kind of store	New England			Mid-Atlantic			Midwest			Mountain-Plains		
	1976	1978		1976	1978		1976	1978		1976	1978	
	<u>Percent</u>											
Large chains	9.2	7.4		10.1	8.7		9.1	8.1		9.3	9.2	
Other chains	10.0	9.5		5.9	6.3		6.0	7.4		6.1	7.5	
Independents	66.2	68.5		78.2	79.6		74.8	73.4		71.1	69.8	
Dairy routes	4.0	3.5		1.6	1.3		2.9	2.5		3.6	3.4	
Bakery routes	.1	.1		.3	.3		.2	.2		.6	.5	
Other mobile stores	2.6	2.5		2.4	2.2		1.8	1.8		2.9	2.8	
Miscellaneous	7.9	8.5		1.5	1.6		5.2	6.5		6.4	6.8	
Total 1/	100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0	
	<u>Percent</u>											
	Southeast			Southwest			Western					
	1976	1978		1976	1978		1976	1978		1976	1978	
Large chains	6.4	6.2		8.2	7.8		11.5	11.3				
Other chains	8.7	11.8		9.1	11.1		6.7	7.6				
Independents	80.4	76.9		76.3	75.3		62.4	63.0				
Dairy routes	.6	.5		1.4	1.0		4.2	3.1				
Bakery routes	.4	.3		.2	.2		.8	.6				
Other mobile stores	1.8	2.1		.8	.8		2.1	2.9				
Miscellaneous	1.7	2.2		4.0	3.8		12.3	11.5				
Total 1/	100.0	100.0		100.0	100.0		100.0	100.0				

1/ Value less than 0.1 percent.

Appendix table 14--Within-region distribution of food sales by kind of store with full fiscal-year participation in food stamp program, fiscal years 1976 and 1978

Kind of store	New England			Mid-Atlantic			Midwest			Mountain-Plains		
	1976	:	1978	1976	:	1978	1976	:	1978	1976	:	1978
	<u>Percent</u>											
Large chains	51.4	:	49.3	56.3	:	54.2	47.2	:	46.3	47.0	:	48.5
Other chains	3.6	:	3.7	2.4	:	2.4	1.8	:	2.1	1.9	:	2.6
Independents	39.9	:	42.1	37.2	:	40.0	47.1	:	47.9	45.7	:	44.4
Dairy routes	2.2	:	1.8	2.3	:	1.7	2.2	:	2.2	2.7	:	2.4
Bakery routes	1/	:	1/	1/	:	1/	1/	:	1/	.1	:	.1
Other mobile stores	.1	:	.2	.1	:	.2	.5	:	.5	.1	:	.1
Miscellaneous	2.8	:	2.9	1.7	:	1.5	1.2	:	1.0	2.5	:	1.9
Total 2/	100.0	:	100.0	100.0	:	100.0	100.0	:	100.0	100.0	:	100.0
	<u>Percent</u>											
	Southeast			Southwest			Western					
	1976	:	1978	1976	:	1978	1976	:	1978	1976	:	1978
Large chains	49.3	:	50.7	47.7	:	49.5	56.3	:	57.9	56.3	:	57.9
Other chains	3.8	:	4.8	2.8	:	3.4	1.4	:	1.9	1.4	:	1.9
Independents	42.9	:	41.1	44.7	:	43.0	35.8	:	34.5	35.8	:	34.5
Dairy routes	1.5	:	.9	1.5	:	1.0	.9	:	.6	.9	:	.6
Bakery routes	.1	:	.1	1/	:	1/	.1	:	.1	.1	:	.1
Other mobile stores	.3	:	.3	.1	:	.2	.1	:	.2	.1	:	.2
Miscellaneous	2.1	:	2.1	3.2	:	2.9	5.4	:	4.8	5.4	:	4.8
Total 2/	100.0	:	100.0	100.0	:	100.0	100.0	:	100.0	100.0	:	100.0

1/ Less than 0.1 percent.

2/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 15--Within-region percentage distribution of food stamp redemptions by stores with full participation in food stamp program, fiscal years 1976 and 1978

Kind of store	New England		Mid-Atlantic		Midwest		Mountain-Plains	
	1976	1978	1976	1978	1976	1978	1976	1978
	<u>Percent</u>							
Large chains	54.1	53.8	51.4	47.2	48.5	47.0	47.5	49.6
Other chains	2.2	2.1	1.3	1.4	1.1	1.3	1.6	2.0
Independents	40.8	41.1	46.0	50.2	48.7	50.2	48.9	47.1
Dairy routes	.7	.6	.6	.5	.6	.4	.8	.6
Bakery routes	1/	1/	1/	1/	1/	1/	1/	1/
Other mobile stores	1/	.1	.1	.1	.3	.3	.1	.1
Miscellaneous	2.2	2.3	.6	.6	.8	.8	1.1	.6
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	<u>Percent</u>							
	Southeast		Southwest		Western			
	1976	1978	1976	1978	1976	1978	1976	1978
Large chains	42.7	42.5	39.7	39.7	53.4	54.2	54.2	54.2
Other chains	1.8	2.4	1.3	1.6	.8	1.1	1.1	1.1
Independents	54.4	54.1	56.6	56.5	41.4	40.5	40.5	40.5
Dairy routes	.4	.3	1.1	.9	.7	.5	.5	.5
Bakery routes	1/	1/	1/	1/	.2	.1	.1	.1
Other mobile stores	.4	.4	.1	.2	.1	.3	.3	.3
Miscellaneous	.3	.3	1.2	1.1	3.4	3.3	3.3	3.3
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Value less than 0.1 percent.

2/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

Appendix table 16--Within-region distribution of cash/check receipts by kind of store with full fiscal year participation in food stamp program, fiscal years 1976 and 1978

Kind of store	New England		Mid-Atlantic		Midwest		Mountain-Plains	
	1976	1978	1976	1978	1976	1978	1976	1978
	<u>Percent</u>							
Large chains	51.2	49.0	56.6	54.6	47.1	46.2	47.0	48.4
Other chains	3.7	3.8	2.5	2.5	1.8	2.1	1.9	2.6
Independents	39.8	42.2	36.5	39.3	47.0	47.8	45.5	44.4
Dairy routes	2.4	1.9	2.4	1.8	2.3	2.2	2.8	2.4
Bakery routes	1/	1/	.1	.1	1/	1/	.1	.1
Other mobile stores	.1	.2	.1	.2	.5	.6	.1	.1
Miscellaneous	2.8	2.9	1.8	1.5	1.3	1.1	2.6	2.0
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Southeast		Southwest		Western			
	1976	1978	1976	1978	1976	1978	1976	1978
	<u>Percent</u>							
Large chains	50.0	51.4	48.4	50.1	56.4	58.0		
Other chains	4.0	5.0	3.0	3.5	1.5	2.0		
Independents	41.7	40.1	43.6	42.2	35.5	34.2		
Dairy routes	1.6	1.0	1.6	1.0	1.0	.6		
Bakery routes	.1	.1	1/	1/	.1	.1		
Other mobile stores	.3	.2	.1	.2	.1	.1		
Miscellaneous	2.3	2.2	3.3	3.0	5.4	5.0		
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0		

1/ Value less than 0.1 percent.

2/ Excludes Puerto Rico, the Virgin Islands, and Guam. The Food and Nutrition Service includes Puerto Rico and the Virgin Islands in its Mid-Atlantic region, and Guam in its Western region whenever data are reported for the territories.

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